**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

MAR 2 5 2013

Mr. David Keith
Project Coordinator
Anchor QEA, LLC
614 Magnolia Avenue
Ocean Springs, MS 39654

RE: Draft Baseline Human Health Risk Assessment
San Jacinto River Waste Pits Superfund Site, Harris County, Texas
Unilateral Administrative Order, CERCLA Docket No. 06-03-10

Dear Mr. Keith:

The Environmental Protection Agency (EPA) and other agencies have performed reviews of the above referenced document dated December 2012. The EPA approves this document with the enclosed modifications.

Please provide copies of the final document to the distribution list. If you have any questions, please contact me at (214) 665-8318, or send an e-mail message to miller.garyg@epa.gov.

Sincerely yours,

Gary Miller
Remediation Project Manager

Enclosure

cc: Luda Voskov (TCEQ)
Bob Allen (Harris County)
Linda Henry (Port of Houston)
Jane Sarosdy (TGLO)

**Comments**
**Draft Baseline Human Health Risk Assessment**

1. (General Comment): Due to the lack of certainty, lack of consensus, and controversial nature of cancer toxicity assessment of dioxins, specifically TDI versus cancer slope factors, the BHHRA shall include a side-by-side risk analysis (sensitivity analysis) of the use of the TDI of 2.3 pg/kg-day and the CSF of 156,000 $(mg/kg\text{-}day)^{-1}$ values. Although several citations are provided suggesting EPA and TCEQ may be moving in the direction of use of non-linear cancer assessment for TCDD, they have not made this practice official policy as of yet. It is clear, that the use of 156,000 $(mg/kg\text{-}day)^{-1}$ will show additional risk in some areas. This additional risk may or not change the need for certain remedial actions; hence why this analysis should be performed.

2. (P. 1-3, Last sentence of Section 1.2): "There is no basis for assuming… that baseline conditions would have continued to exist had the TCRA not been implemented." Though it may be true that exact conditions may have been somewhat different, there is basis to assume a large degree of contamination existed before the TCRA and would have continued had the TCRA not been implemented. Data that contributed to site discovery and listing dates long before implementation of the TCRA. This statement shall be modified accordingly or removed.

3. (Section 2.2, Demographics): This section does not identify the demographics of the Highlands community nor does it refer to Highlands as a residential area adjacent to the USEPA's Preliminary Site Perimeter. This section does, however, recognize Channelview and its residential demographics given information from the 2010 Census. Demographic information shall be included for the Highlands community.

4. (P. 2-6, Section 2.3.2.1, Trespasser): The HHRA shall better define trespasser/ hypothetical trespasser as referred in the BHHRA. The only exposure medium for which a theory of exposure scenario was assessed was soil. The HHRA shall describe the activity the trespasser would be engaged in while present at the site North of IH-10 and activity on the Peninsula South of IH-10.

5. (P. 3-2, Section 3.1.2.2 Tissue): The discussion correctly notes the uncertainty in relating the catfish tissue analyses for COPCs to ingestion risks. It is asserted in this section that no data are available on use of the Site for fishing, but the absence of this data is a data gap of the RI, and the deficiency must be met with conservative assumptions. There is uncertainty in fish tissue analyses and use of those data. No records have been offered as to the sizes / ages of fish used in the tissue analyses compared to those eaten. Justification shall be provided to document why the analyses of tissue from the RI program represents the tissue concentrations of the COPCs used in the BHHRA. In addition, data/ references/justification shall be provided that supports the claim that use of catfish data are more conservative than use of other fish. Documentation shall be provided that the fish tissue analyzed is representative of the ages of fish likely to be consumed. If such is not available, a credible projection of contaminants in mature catfish shall be included.

6. (P. 3-3, Section 3.1.2.2): This section first mentions the uncertainty of the various finfish and shellfish caught and eaten in the USEPA's Preliminary Site Perimeter. Thus the hardhead catfish was used as the bases of the assessment. The HHRA shall provide what, if any, information that was gathered in the profile survey (conducted by the PRP's independent contractor) regarding the fishing bounty. If the data from this activity was utilized in developing the BHHRA, it shall be included; and if not utilized, then the HHRA shall justify that. See comment above for page 3-2, Section 3.1.2.2.

7. (P. 3-4, Section 3.1.2.3, Soil): Use of shallow subsurface soil data (6" – 12" below grade) is used for the commercial worker receptor in the area south of I-10. However, construction-type activities may take place in this area in the future. The HHRA shall evaluate deeper (> 2 ft) soil data for risk.

8. (P. 5-1, Section 5.1.1, Exposure Scenarios): This section describes the exposure a recreational fisher would encounter as well as what exposure a subsistence fisher would encounter. The differing factor is the inclusion of the descriptor "incidental ingestion and dermal contact" in reference to sediment and soils for the recreational fisher. The HHRA shall define why this was used and clarify what difference it signifies in the identification of the types of fisher.

9. (P. 5-8, Section 5.1.2.2.2, Exposure Parameters): This section seeks to detail the differences in activity and intake for exposure based on age categories. It goes on the explain that the assumption that "young children would have higher potential exposures (on a per unit body weight basis) relative to other age groups" is a *conservative assumption* based on the upper-bound RME scenario. It continues to say that the individuals considered most likely to use the area under study under baseline conditions are adults. Given this only adult exposures were evaluated for the CTE evaluation. Children are likely brought to the site by adults, and although they may be too young to fish, they are more likely to be exposed through incidental ingestion and dermal contact of sediment and soil. Therefore, this group and exposure scenario shall be included in the BHHRA.

10. (P. 5-14, Section 5.1.2.2.2, Relative Bioavailability Adjustment): The use of RBA's less than 100% in the deterministic baseline assessment shall be explained in more detail. Specifically, clear justification shall be provided regarding use of a relative bioavailability adjustment (RBA) of 50% for the two COPCs, arsenic and dioxin/furans, for soil and sediment ingestion exposures.

11. (P. 5-41 Bottom of 1st paragraph, Section 5.2.3.3.1): The probabilistic risk assessment (PRA) assumes (referencing Tables 5-8, 5-9) that each variable is independent, except for dependence of skin area on body weight. The PRA discussion shall also recognize the relationships among other exposure factors (i.e., ingestion rates may be dependent on body weight and age). The PRA shall clearly specify what exposure factors / exposure factor statistics were applied to develop the 50th, 90th, and 95th percentile risk estimates.

12. (P. 5-42 line 20, Section 5.2.3.3.1): The reference to Table 5-22 shall cite values of 0.4, 2, and 3 (not 4). If 4 is asserted to be correct, however, the PRPs shall clarify the reference and

source of this value. The same error appears on P. 5-43, line 12. The PRA summary tables shall be double checked against the text.

13. (P. 5-43 bottom sentence, Section 5.2.3.3.1): Reference to Figure 5-8 claims "incremental additional hazard" relative to background, however, the Figure somewhat minimizes the effect by using such a wide range of hazard index values. A figure (either new or revised 5-8) shall show a more narrow range of interest (e.g., hazard indices between 0.1 and 10), the difference between the HI of the area evaluated and background would be shown more clearly. The site area has approximately 22% greater risk index than background in this illustration, and the text shall therefore objectively reflect this.

14. (P. 5-44, Section 5.2.3.3.2, Hypothetical Young Child Recreational Visitor): To better understand the exposure scenario, the HHRA shall clarify/elaborate on activity expected by the recreational visitor north of I-10.

15. (P. 5-45, Section 5.2.4.1): This section shall note and discuss the known biases in fish sampling. No sampling truly represents the population sizes caught by fishers. Most sampling techniques catch smaller fish than those sought and eaten by anglers. This bias is especially significant in this analysis, because the COPCs (including mercury, dioxins and PCBs) accumulate to higher tissue concentrations in older and larger fish. This fact is potentially a major bias, and the BHHRA may significantly underestimate Site risks based on fish consumption. The bias is compounded by the uncertainty in this key variable because few fish were caught and analyzed. See also the comment offered above for Section 3.1.2.2, Tissue.

16. (P. 5-49, Section 5.2.4.3.2, The Presence of Subsistence Fishers): The section states that it is rare that true subsistence fishing populations are found. The HHRA shall provide references and support for this statement. This evaluation seems to have been made without consideration of the current economical state the county is in, and without apparent complete review of all nearby communities from which fishers may come (Baytown, Highlands, McNair, Barrett Station, and Crosby). The 2010 Census data related to demographics and socioeconomic levels of these areas of Harris County shall be investigated to determine whether or not the probability of true subsistence fishers is possible.

17. (P. 5-51, Top paragraph, Section 5.2.4.3.2 and Section 5.2.4.3.3): The general population description shall discuss potential differences with minority communities and whether they are likely to consume more or less fish.

18. (P. 5-51, Section 5.2.4.3.3, Estimated Exposure from Fish Consumption): This section introduces the plausibility of a reduction of chemical contamination due to "typical cooking methods". The HHRA shall identify the methods referred to which may contribute to this loss. The FDA indicates that trimming the fat and broiling the fish may help to reduce the dioxin exposure. (http://www.fda.gov/Food/FoodSafety/FoodContaminantsAdulteration/ChemicalContaminants/DioxinsPCBs/ucm077524.htm#4 ). Evaluating cooking methods and providing the information on preparation may need to be addressed in the fish advisory documents.

19. (Table 5-4): The first and second values for RME EPCs for dioxins/furans in Table 5-4 shall be confirmed as the TEQ value calculated using zero for nondetects is higher than that calculated using ½ the detection limit for nondetects.